

## **Novel antimicrobial approaches to improve milk quality and safety**

Microbial damages caused by bacteria in the dairy industry are a fundamental threat to the safety and quality of milk products. Many bacteria in industrial settings tend to form multicellular communities known as biofilms. Biofilms represent one of the most successful strategies for bacteria to survive unfavorable environmental conditions, for instance in the food industry. In order to ensure the safety and quality of dairy food, there is a fundamental requirement of effective cleaning and sanitizing procedures. Otherwise, residual spores and bacteria on inadequately cleaned surfaces can quickly form multicellular biofilms that are extremely difficult to remove. Therefore, mitigation of biofilm forming species will enable the development of novel means and technologies for preventing biofilm formation and subsequent contamination of dairy products. We are currently developing three different approaches to control biofilm formation: (i) a model system to evaluate the cleaning and sanitizing effectiveness of milking equipments on dairy farms; (ii) a novel super-hydrophobic surfaces which minimizes bacterial adhesion and subsequent biofilm formation; (iii) searching for natural molecules capable of inhibiting the signal transduction pathway responsible for biofilm formation.